

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**

# **AGREEMENT BETWEEN CALTECH AND PASADENA WATER AND POWER FOR NASA TO FUND A WATER TREATMENT PLANT FOR THE CITY'S MONK HILL WELLS**

**Press Kit  
January 30, 2006**



## Media Contact:

Merrilee Fellows  
NASA Headquarters Public Affairs,  
Office at Jet Propulsion Laboratory  
Phone: (818) 393-0754

## Contents

General Release .....	3
Media Services Information .....	4
Comprehensive Cleanup Overview .....	5
Highlights on Cleaning Up Groundwater Offsite (Beyond JPL) .....	6
NASA-funded Treatment for Arroyo Seco Wells.....	6
Quick Facts .....	6
NASA-funded Treatment for Lincoln Avenue Water Company.....	8
Quick Facts .....	8
Highlights on Cleaning Up the Source: Cleaning Up Groundwater	
Onsite (beneath JPL).....	9
Plant at JPL .....	9
Expansion of Source Area Cleanup Proposed .....	9
Quick Facts .....	9
Groundwater Monitoring (Well Water Sampling).....	11
On-Facility (on JPL) Soil Cleanup.....	11

## **General Release**

Merrilee Fellows  
NASA Management Office/Jet Propulsion Laboratory  
Phone: (818) 393-0754

January 24, 2006

RELEASE: 05-003 NMO

### **FINAL AGREEMENT EXECUTED FOR NEW TREATMENT PLANT**

The City of Pasadena and the California Institute of Technology, as the contractor that manages NASA's Jet Propulsion Laboratory (JPL), finalized an agreement this week to provide NASA funding of a major new water treatment plant in Pasadena.

"This agreement is a win-win situation for everyone," said Steve Slaten, NASA's Remedial Project Manager at JPL. "It is exciting because it allows NASA to be able to clean up the Monk Hill sub-basin far sooner than if we tried to remove all the chemicals using a treatment plant on site at JPL."

Once operational, the city will be able to re-open its wells and provide customers with clean drinking water. NASA will pay for all of the costs related to the plant's design, construction and operation as well as provide technical support.

"Combined with our existing on-site treatment plant and with the NASA-funded system at Lincoln Avenue Water Company in Altadena, this new major step moves toward a comprehensive cleanup and helps prevent further spread of these chemicals," Slaten said.

Volatile organic compounds and perchlorate that originated from waste disposal practices on the JPL site many decades ago have been found in the groundwater beneath JPL. In 1990, Pasadena installed a NASA-funded air stripper to remove volatile organic compounds from water in the Arroyo Well, Well 52, the Ventura Well, and the Windsor Well. This new agreement continues treatment for those chemicals and adds treatment for perchlorate.

When detected levels of perchlorate in the wells rose above California's action level for perchlorate, the city closed the wells, and they have remained closed since. A proposed treatment system will undergo extensive public comment and regulatory review. It is anticipated the system will be a liquid-phase granular activated carbon system to remove volatile organic compounds from the water and an ion exchange system to remove perchlorate.

For information about NASA's groundwater cleanup efforts on the Web, visit:

<http://jplwater.nasa.gov>

- end-

# Media Services Information

## Media Credentialing

Journalists who wish to access the Jet Propulsion Laboratory for purposes related to NASA's Groundwater Cleanup should contact Merrilee Fellows at (818) 393-0754 to arrange for advance credentials. All media must have valid photo identification. Non-U.S. citizens must also bring their passport and visa.

Journalists who hold a JPL press badge must make a separate request to access the Jet Propulsion Laboratory for issues regarding NASA's Groundwater Cleanup efforts.

## Internet Information

News and information on the NASA's Groundwater Cleanup, including an electronic copy of this press kit, fact sheets, status reports and images, are available from the NASA website at **[www.jplwater.nasa.gov](http://www.jplwater.nasa.gov)**.

## Overview on NASA's Groundwater Comprehensive Cleanup Plan

As part of its commitment to clean up the groundwater from chemicals associated with historic waste-disposal practices at the Jet Propulsion Laboratory (JPL), NASA has developed a comprehensive approach to cleanup. This approach includes efforts to clean up groundwater directly beneath the facility where the so-called "source area" exists, as well as groundwater beyond JPL that also contains chemicals associated with past practices at the JPL site.

To date, NASA has used the best available technology to construct a demonstration treatment plant to treat groundwater chemicals directly beneath the source area at JPL and has plans to expand this system.<sup>1</sup> NASA has also funded a treatment plant at Lincoln Avenue Water Company that allows it to provide clean water to its customers.<sup>2</sup>

NASA is now stepping up its cleanup efforts with a new proposed action. With Caltech's and the City of Pasadena's approval of NASA's offer to fund a major new water treatment plant in Pasadena, NASA will be able to remove groundwater chemicals off-site at higher volumes and in closer proximity to Pasadena's four closed wells in the Arroyo Seco.

This comprehensive effort will help prevent further movement of the chemicals in the groundwater and help local water purveyors provide residents with a safe and continuous source of drinking water.

In addition, NASA continues to monitor the groundwater throughout the area, clean up the soil at JPL and work closely with water purveyors and regulatory agencies.

---

<sup>1</sup> For more information on source area cleanup, see NASA's November Bilingual Newsletter, at [http://jplwater.nasa.gov/NMOWeb/AdminRecord/docs\\_nonadmin/November%202005%20Newsletter.pdf](http://jplwater.nasa.gov/NMOWeb/AdminRecord/docs_nonadmin/November%202005%20Newsletter.pdf), and the Proposed Plan for that expanded source area cleanup at: [http://www.jplwater.nasa.gov/NMOWeb/AdminRecord/docs\\_nonadmin/Long%20Proposed%20Plan%20Final.pdf](http://www.jplwater.nasa.gov/NMOWeb/AdminRecord/docs_nonadmin/Long%20Proposed%20Plan%20Final.pdf).

<sup>2</sup> For more information on the Lincoln Avenue Water Company treatment plant, see, <http://jplwater.nasa.gov/NMOWeb/OU3Anniversary.ASP>

## **Cleaning Up Groundwater Beyond JPL**

### **Arroyo Wells in the Monk Hill Subbasin**

Adding to NASA's cleanup efforts already underway, Pasadena Water & Power will soon propose to build and operate a groundwater treatment plant near four closed Arroyo Seco drinking water wells owned by the City. NASA will fund the design, construction and operation of this system. Once operational, the new system will help clean the aquifer and prevent further movement of the chemicals away from the site. Importantly, the plant will remove chemicals from the groundwater and the City will be able to apply for State approval to re-open the wells and provide its customers with clean drinking water that meets all standards set to protect public health.

The treatment plant will allow NASA to remove groundwater chemicals at higher volumes and in closer proximity to Pasadena's closed wells than by removing the chemicals underlying the Arroyo from treatment plants constructed solely on the JPL site.

With this new treatment plant, NASA will have funded and/or built three treatment plants since 2004 to remove volatile organic compounds and perchlorate from groundwater.

Combined with NASA's existing on-site demonstration treatment plant that NASA proposes to expand, and with the NASA-funded plant at Lincoln Avenue Water Company, the efforts begin a comprehensive cleanup to remove chemicals in the groundwater on and off-site and prevent further spread of chemicals. In 2006, NASA will initiate a process to review all the available information to determine if these efforts should be sufficient to constitute an effective overall cleanup.

### **Quick Facts:**

#### *Technology:*

- Pasadena Water and Power will propose a technology and location for the treatment plant by the end of 2006. The proposal will undergo a federally required public comment period as well as a City permitting approval review.
- It is anticipated that the system will combine a system to remove volatile organic compounds, such as a liquid-phase granular activated carbon system like that currently being used by Lincoln Avenue Water Company and on-site at JPL, and an ion exchange system (similar to that used by Lincoln Avenue Water Company) to remove perchlorate.
- The Agreement provides funding for a treatment plant designed to treat 7000 gallons per minute, sufficient to meet the City's seasonal water supply needs, and several times larger than the NASA-funded Lincoln Avenue Water Company plant in Altadena.

#### *When:*

- The plant is anticipated to become operational in 2007.

*Approval Process:*

- The City review process is expected to begin shortly, and will include several opportunities for public review and comment on the proposed approach.

*History:*

- In 1990, the City of Pasadena installed a NASA-funded air stripper with granular activated carbon to remove volatile organic compounds detected in the Arroyo Well, Well 52, the Ventura Well, and the Windsor Well.
- When perchlorate in these wells rose above California's action level in 2003, the City closed the wells and they have remained closed since.

## **Cleaning Up Groundwater Beyond JPL**

### **NASA-Funded Treatment Plant at Lincoln Avenue Water Company**

As part of its comprehensive approach to cleaning up groundwater near JPL, NASA funded a treatment plant at Lincoln Avenue Water Company in 2004 to remove perchlorate from the water. It is coupled with an existing liquid-phase granular activated carbon process to remove volatile organic compounds.

Removal of the chemicals allows Lincoln Avenue Water Company to continue to deliver water to its customers that meets California Department of Health Services requirements and to meet the Company's varying, seasonal water demands.

### **Quick Facts**

#### *When:*

- Using an ion exchange process, Lincoln Avenue Water Company began removing perchlorate from the water in July 2004.

#### *Technology:*

The technology uses a perchlorate-selective resin to absorb or "capture" the perchlorate and remove it from the water to a non-detectable level.

- The system to treat perchlorate, installed in 2004, is coupled with a NASA-funded liquid-phase granular activated carbon system that has been removing volatile organic compounds from the Lincoln Avenue Water Company wells for over a decade.
- The plant has functioned well throughout its more than a year of operation, treating water at a rate of up to 2,000 gallons per minute.



## **Treating the Source: Cleaning Up Groundwater Beneath JPL**

### **Plant at JPL**

On-site treatment is a critical part of the overall groundwater cleanup effort. Located in the north-central section of the 176-acre JPL complex, the on-site demonstration treatment plant, or so-called source area treatment plant, focuses on an eight-acre by 100-foot-thick portion of the aquifer deep beneath the JPL facility. This area contains more than two-thirds of all unwanted chemical mass associated with groundwater, both beneath JPL and beneath areas adjacent to JPL.

NASA's strategy to target chemicals at the source is helping to:

- Remove chemicals from groundwater at the source area where the highest levels of the chemicals are found, and
- Prevent further movement of the chemical groundwater plume to reduce the amount of time needed for treatment.

### **Next Steps: Source Area Treatment Expansion**

Given its effectiveness to date, NASA is proposing to expand its on-site treatment plant located at JPL, continuing to target the "source area."

- The proposed expansion would more than double the rate of treatment, bringing it to approximately 350 gallons per minute.
- NASA would add up to two extraction wells to draw groundwater from beneath JPL to the aboveground treatment plant, bringing the total number of extraction wells to three or four.
- This effort would also involve installing one additional injection well to return clean water to the aquifer, bringing the total number of injection wells to three.
- The expansion would also include pipeline installation to connect the new wells to the existing plant, but would not increase the "footprint" of the existing treatment plant.

### **Quick Facts:**

*When:*

- Constructed in 2004, the plant became operational in early 2005.

*Technology:*

- The system utilizes two technologies, a liquid-phase granular activated carbon system to remove volatile organic compounds and a fluidized bed reactor to remove perchlorate.

- The volatile organic compound treatment technology is a conventional liquid-phase granular activated carbon system. NASA selected the perchlorate removal technology, a fluidized bed reactor, after an extensive comparative analysis of the available treatment technologies.
- For removal of the volatile organic compounds, conventional liquid-phase granular activated carbon is used. This process consists of carbon particles in a tank. As the water passes through the tank containing the carbon particles, the volatile organic compounds in the water attach to the carbon particles. After enough volatile organic compounds attach to the carbon particles, the carbon is removed and processed at a secure, licensed facility and fresh carbon is placed in the system.
- After the chemicals are removed from the water, the clean water gets put back into the aquifer using two injection wells, uphill and up-gradient on the JPL site.
- The groundwater extraction wells are screened so that they draw water at 200-300 feet below ground surface. The re-injection enters the aquifer at approximately 250 feet below ground surface.

## **GROUNDWATER MONITORING – WELL WATER SAMPLING**

Scientific research is central to NASA's objective to develop a sound comprehensive cleanup plan. Using various methods, NASA continually seeks to understand conditions and the extent of chemicals in groundwater.

Quarterly, groundwater samples are taken from the 25 NASA monitoring wells. NASA uses this information to better understand the complicated groundwater flow conditions and the movement and extent of the groundwater that contains chemicals associated with historic waste disposal practices at JPL. Quarterly results are also placed on the NASA water cleanup website at <http://jplwater.nasa.gov>.<sup>3</sup>

## **ON-FACILITY (ON-JPL) SOIL CLEANUP**

Having completed detailed site investigations, NASA took steps to clean up the chemicals in soils to keep them from spreading to groundwater. In the late 1990s, NASA ran a small experiment or pilot test, using a technology called soil vapor extraction or SVE to remove VOCs in soil. This test was so effective that NASA began using the technology on a wider area of chemicals in the ground. NASA proposed and received public input on using this technology as the final cleanup remedy for the on-facility soils in 2002. Recent results indicate that the chemical removal from soils is nearly complete.

---

<sup>3</sup> The groundwater sampling reports are available at the lower part of this page:  
[http://cercla.jpl.nasa.gov/NMOWeb/AdminRecord/ADMIN\\_KeyDocuments.asp](http://cercla.jpl.nasa.gov/NMOWeb/AdminRecord/ADMIN_KeyDocuments.asp)